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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/470,650	12/22/1999	THOMAS A. FIGURA	94-0280.04	6407

7590 03/15/2002

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EXAMINER

KILDAY, LISA A

ART UNIT

PAPER NUMBER

2829

DATE MAILED: 03/15/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/470,650

Applicant(s)

FIGURA ET AL.

Examiner

Lisa A Kilday

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2002.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8, 10-14, 19, 23, 24, 29-32 and 36-43 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-14, 19, 23, 24, 29-32 and 36-43 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

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Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1-8, 10-14, 19, 23-24, 29-32 and 36-43 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant is not granted a benefit of priority under 35 U.S.C. 120 until applicant demonstrates disclosure of a reasonable "representative number of species" to support today's broad genus encompassing the concept of "depositing **any** polymer by HDP." See Guidelines for Examination of Patent Applications under 35 U.S.C. 112, 66 Fed. Reg. 1099 (2001). If applicant desires the benefit of priority under 35 U.S.C. 120, applicant must specifically point out where a representative number of species supporting the genus of claim 1 appears in the specification.

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1-8, 10-14, 19, 23-24, 29-32, 36-43
Claims *1* rejected under 35 U.S.C. 102(b) as being clearly anticipated by Robles

(5,804,259). In re claim 1 and 13, Robles discloses a method of forming a semiconductor device comprising: providing a surface within the device, providing a first feature on the surface, providing a second feature on the surface, and forming a polymer between the first and second feature in HDP environment (abstract).

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In re claim 2 and 14, Robles discloses modifying said polymer within said HDP (col. 16 lines 49-65).

In re claim 3, Robles discloses that the step of modifying said polymer further comprises etching a portion of said polymer (col. 16 lines 41-45).

In re claims 4 & 5, Robles discloses that the first and second feature comprises of metallic feature or metal (col. 16 lines 1-10).

In re claim 6, Robles discloses that the first feature is a first metal line and the second feature is a second metal line (col. 16 lines 1-10).

In re claim 7, Robles discloses processing a semiconductor device by providing a first and second protruding feature, defining a recess between the features, and plasma depositing a material within said recess (fig. 7a-7b).

In re claim 8, Robles discloses that the plasma depositing comprises of carbon and halogen (claim 6).

In re claim 10, Robles discloses that the plasma depositing comprises of carbon and hydrogen (claim 5).

In re claim 11, Robles discloses plasma depositing a halogen free material (claim 5).

In re claim 12, Robles discloses that the plasma depositing a material comprises of carbon, a halogen, and hydrogen (col. 18 lines 45-65).

In re claim 19, Robles discloses a method of providing a polymer between metal lines on a wafer by providing a plasma source, exposing said wafer to said plasma

source, introducing a feed gas to said wafer, establishing a pressure around said wafer, and forming said polymer between said metal lines using said feed gas (fig. 8).

In re claim 23, Robles discloses a method of forming a polymer by providing a semiconductor device having at least two exposed metal lines and performing a process with the parameters of: a source power magnitude, a bias power magnitude, a pressure, a duration, and a process gas flow rate (fig. 1 & 2, col. 9 lines 50-60).

In re claim 24 with the limitations of claim 23, Robles discloses providing a HDP etcher (col. 9 lines 42-45).

In re claim 29, Robles discloses a method of selectively forming a polymer by providing a device with exposed protruding features; providing an etcher having HDP settings comprising of: a source power setting, a bias power setting and a flow rate setting and exposing said device to a HDP process within said etcher (fig. 1 & 2, col. 9 lines 50-60 col. 16 lines 40-47).

In re claim 30, Robles discloses defining at least one recess, filling said recess with said polymer, and restricting formation of said polymer to within said recess (col. 16 lines 40-47).

In re claim 31, Robles discloses that at least one recess with said features comprises defining a recess between 2 protruding features of said plurality of protruding features (fig. 7a/7b).

In re claim 32, Robles discloses step of restricting formation of said polymer to within said recess further comprises preventing a formation of said polymer above said 2 protruding features (ref. 410).

In re claim 36, Robles discloses a method of selectively providing a material between metal lines by forming said material in a deposition environment and removing any excess of material in an etching environment, which is the same as the deposition environment (col. 9 lines 42-45).

In re claim 37, Robles discloses forming material in etch chamber (col. 9 lines 42-45).

In re claim 38, Robles discloses the removal of any excess material is in a plasma deposition chamber (col. 9 lines 42-45).

In re claim 39, Robles discloses providing a HDP plasma and forming a polymer between metal lines (claim 1, fig. 7a).

In re claim 40, Robles discloses placing an in process device of first and second metal line, placing said device in a deposition and etch surrounding, and forming a polymer between first and second metal line (fig. 8).

In re claim 41, Robles discloses providing a layer over said polymer and retaining a state of said polymer (ref. 590, claim 16).

In re claim 42, Robles discloses having a polymer with a thermal stability sufficient to withstand said layer (col. 18 lines 34-45).

In re claim 43, Robles discloses providing said layer outside of deposition and etch surrounding (fig. 8 ref. 580, 590).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11

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F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Omum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1-8, 10-14, 19, 23-24, 29-32 and 36-43 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-2, 6, 10, 13 of U.S. Patent No. 6,117,764 in view of Robles (5,084,259). Robles discloses the direct deposition of polymers (540, col. 5 lines 29-35). Robles discloses that the polymer material include the species parylene (abstract, claims 1-3). Figura et al. teaches that the deposition of a polymer is a consequence of etching. Figura et al. does not teach direct deposition of a polymer. Figura et al. does not teach any species of the genus polymer. However, it would be obvious to one skilled in the art to deposit an organic material such as a polymer in order to lower the dielectric constant of the film and increase the stability due to the carbon-based layers ('259: col. 18 lines 30-50). It would be obvious to one skilled in the art to choose the species parylene or a fluorocarbon because both lower the dielectric constant ('259, col. 18 lines 30-50, col. 2 lines 4-11, 40-63).

Conclusion

Any inquiry of a general nature or relating to the status of this application should be directed to the Group Receptionist whose telephone number is (703) 308-0957. See MPEP 203.08.

Any inquiry concerning this communication from the examiner should be directed to Lisa Kilday whose telephone number is (703) 306-5728. If attempts to reach the

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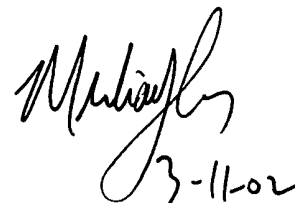
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examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry, can be reached on (703) 308-1680. The fax number for the group is (703) 305-3432. MPEP 502.01 contains instructions regarding procedures used in submitting responses by facsimile transmission.

Lisa Kilday

LAK

3/11/02

Handwritten signature of Michael J. Sherry, dated 3-11-02.

MICHAEL J. SHERRY
PRIMARY EXAMINER